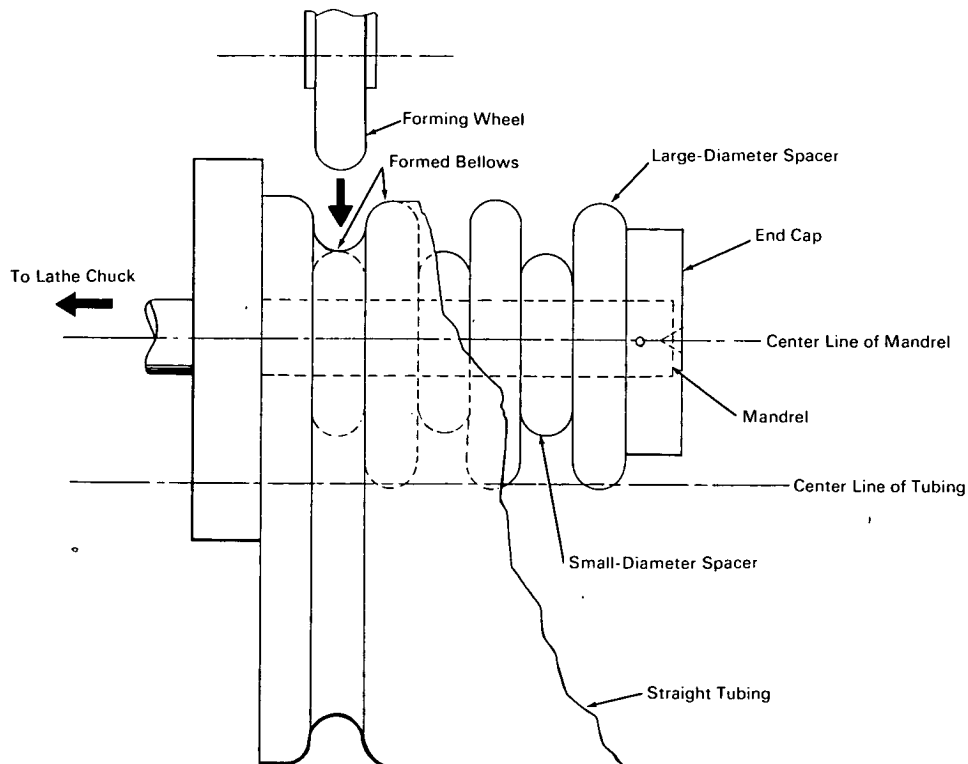


NASA TECH BRIEF



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Metal Bellows Custom-Fabricated from Tubing



The problem: To fabricate sheet-metal bellows in various odd sizes that are not normally carried in stock or when the required quantities are not large enough to warrant the procurement of production-run machine tools.

The solution: A mandrel assembly mounted in a lathe chuck is used with a forming wheel to roll-form the bellows from standard sheet-metal tubing.

How it's done: A mandrel consisting of a cylinder with a shoulder on one end is mounted on a lathe chuck. Alternate small- and large-diameter spacer

rings are slipped on the mandrel and held in place with an end cap, which is then centered against the tailstock of the lathe. The difference in the outside radii of adjacent spacers is the desired depth of a corrugation to be formed, and the width of a spacer determines the width of a corrugation.

After the mandrel assembly is mounted on the lathe, the sheet-metal tubing is slipped over the assembly and the lathe started. The bellows corrugations are then formed one at a time by pressing the freely rotating forming wheel (mounted on the lathe compound) against the side of the tubing midway between

(continued overleaf)

each pair of large spacers. The completed bellows is readily slipped off the mandrel assembly, since the smallest inside diameter of the bellows is greater than the outside diameter of the largest spacer.

Notes:

1. Spacers and mandrels of various sizes can be used to custom-fabricate bellows of any desired dimensions.

2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Lewis Research Center
21000 Brookpark Road
Cleveland, Ohio, 44135
Reference: B65-10150

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated.

Source: Lewis Research Center
(Lewis-192)